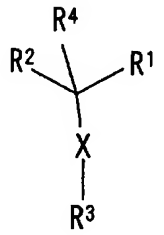
IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A compound represented by formula (1):



(1)

wherein,

R^1 represents phenyl ~~which may have a substituent~~ which may have 1 to 3 substituents selected from halogen atoms, C_{1-6} alkyl groups, trihalogenomethyl groups, C_{1-6} alkoxy groups, formyl group, C_{2-6} alkanoyl groups, carboxyl group, carboxyamino C_{1-6} alkyl groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkyl groups, oxo group, nitro group, cyano group, amidino group, C_{2-6} alkenyloxy groups, hydroxy group, thioxo group, amino group, C_{1-6} alkylamino groups, di(C_{1-6} alkyl)amino groups, C_{1-6} alkoxycarbonyl groups, carbamoyl group, C_{1-6} alkylcarbamoyl groups, di(C_{1-6} alkyl)carbamoyl groups, thiocarbamoyl group, C_{1-6} alkylthiocarbamoyl groups, di(C_{1-6} alkyl)thiocarbamoyl groups, mercapto group, C_{1-6} alkylthio groups, C_{1-6} alkylsulfinyl groups and C_{1-6} alkylsulfonyl groups,

R^2 represents a pyridyl group which may be substituted with 1 to 3 substituents selected from halogen atoms, cyano group, C_{1-6} alkyl groups, hydroxy group, C_{1-6} alkoxy groups, C_{2-6} alkenyloxy groups, carboxy C_{1-6} alkyl groups, C_{1-6} alkoxycarbonyl C_{1-6} alkyl groups, hydroxy C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-sulfonyl C_{1-6} alkyl groups, N,N-di(C_{1-6} alkyl)aminosulfonyl C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-thio C_{1-6} alkyl groups, azido-C_{1-6} alkyl groups, amino C_{1-6} alkyl groups, C_{1-6} alkylamino C_{1-6} alkyl groups, di(C_{1-6} alkyl)amino C_{1-6} alkyl groups, hydroxy C_{1-6} alkylamino C_{1-6} alkyl groups, C_{1-6} alkoxy C_{1-6} alkylamino C_{1-6} alkyl groups,

bis(C_{1-6} alkoxy C_{1-6} alkyl)amino C_{1-6} alkyl groups, (hydroxy C_{1-6} alkyl)(C_{1-6} alkoxy C_{1-6} alkyl)amino C_{1-6} alkyl groups, C_{2-6} alkanoylamino C_{1-6} alkyl groups, di(C_{2-6} alkanoyl)amino C_{1-6} alkyl groups, carboxyamino C_{1-6} alkyl groups, di(C_{1-6} alkylcarbonylamino C_{1-6} alkyl)amino C_{1-6} alkyl groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkyl groups, di(C_{1-6} alkoxycarbonyl)amino C_{1-6} alkyl groups, carbamoylamino C_{1-6} alkyl groups, N-C_{1-6} alkylcarbamoylamino C_{1-6} alkyl groups, N,N-di(C_{1-6} alkyl)carbamoylamino C_{1-6} alkyl groups, aminosulfonylamino C_{1-6} alkyl groups, N-C_{1-6} alkylsulfonylamino C_{1-6} alkyl groups, di(C_{1-6} alkyl)aminosulfonylamino C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-sulfonylamino-C_{2-6} alkanoylamino C_{1-6} alkyl groups, amino C_{1-6} alkylcarbonylamino C_{1-6} alkyl groups, N-C_{1-6} alkylamino C_{1-6} alkylcarbonylamino C_{1-6} alkyl groups, N,N-di(C_{1-6} alkyl)amino C_{1-6} alkylcarbonylamino C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-C_{2-6} alkenylcarbonylamino C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-carbonylamino C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-thiocarbonylamino C_{1-6} alkyl groups, C_{1-6} alkoxyoxalylamino C_{1-6} alkyl groups, (C_{6-10} aromatic hydrocarbon-sulfonyl)(C_{1-6} alkyl)amino C_{1-6} alkyl groups, C_{1-6} alkylsulfonylamino C_{1-6} alkyl groups, C_{1-6} alkylsulfonylamino C_{1-6} alkyl groups, carbamoyloxy C_{1-6} alkyl groups, N-C_{1-6} alkylcarbamoyloxy C_{1-6} alkyl groups, N,N-di(C_{1-6} alkyl)carbamoyloxy C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-C_{1-6} alkylcarbamoyloxy C_{1-6} alkyl groups, C_{1-6} alkoxycarbonyloxy-C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon-oxycarbonyloxy C_{1-6} alkyl groups, C_{6-10} aromatic hydrocarbon carbonylhydrazonomethyl groups, C_{2-6} alkenyl groups, carboxy-C_{2-5} alkenyl groups, C_{1-6} alkoxycarbonyl-C_{2-6} alkenyl groups, carbamoyl C_{2-6} alkenyl groups, formyl group, carboxyl group, C_{6-10} aromatic hydrocarbon-carbonyl groups, C_{1-6} alkoxycarbonyl groups, carbamoyl group, N-C_{1-6} alkylcarbamoyl groups, N,N-di(C_{1-6} alkyl)carbamoyl groups, C_{3-8} cycloalkyl-C_{1-6} alkylcarbamoyl groups, C_{1-6} alkylthio C_{1-6} alkylcarbamoyl groups, C_{1-6} alkylsulfinyl C_{1-6} alkylcarbamoyl groups, C_{1-6} alkylsulfonyl C_{1-6} alkylcarbamoyl groups,

hydroxyaminocarbonyl group, C_{1-6} alkoxycarbamoyl groups, hydroxy C_{1-6} alkylcarbamoyl groups, C_{1-6} alkoxy C_{1-6} alkylcarbamoyl groups, amino C_{1-6} alkylcarbamoyl groups, amino C_{1-6} alkylthiocarbamoyl groups, hydroxy C_{1-6} alkylcarbamoyl groups, C_{1-6} alkoxycarbonyl C_{1-6} alkylcarbamoyl groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkylcarbamoyl groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkylthiocarbamoyl groups, C_{6-10} aromatic hydrocarbon-carbamoyl groups, hydrazinocarbonyl groups, N-C_{1-6} alkylhydrazinocarbonyl groups, N'-C_{1-6} alkylhydrazinocarbonyl groups, N',N'-di(C_{1-6} alkyl)hydrazinocarbonyl groups, N,N'-di(C_{1-6} alkyl)hydrazinocarbonyl groups, N,N',N'-tri(C_{1-6} alkyl)hydrazinocarbonyl groups, amino group, C_{1-6} alkoxy C_{1-6} alkylamino groups, amino C_{1-6} alkylamino groups, (C_{1-6} alkylamino C_{1-6} alkylamino groups, (C_{1-6} alkylamino C_{1-6} alkyl)(C_{1-6} alkyl)amino groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkylamino groups, di(C_{1-6} alkyl)amino C_{1-6} alkylamino groups, carboxyl C_{1-6} alkylamino groups, (carboxyl C_{1-6} alkyl)(C_{1-6} alkyl)amino groups, hydroxy C_{1-6} alkylamino groups, (hydroxy C_{1-6} alkyl)(C_{1-6} alkyl)amino groups, C_{1-6} alkylthio C_{1-6} alkylamino groups, C_{1-6} alkylaminocarbonyloxy C_{1-6} alkylamino groups, (C_{1-6} alkylaminocarbonyloxy C_{1-6} alkyl)(C_{1-6} alkyl)amino groups, C_{1-6} alkylsulfinyl C_{1-6} alkylamino groups, C_{1-6} alkylsulfonyl C_{1-6} alkylamino groups, groups represented by the formula: $-N(R^{12})SO_2R^{11}$ (wherein, R^{11} represents a C_{1-6} alkyl group, hydroxy C_{1-6} alkyl group, amino C_{1-6} alkyl group, C_{1-6} alkylamino C_{1-6} alkyl group, di(C_{1-6} alkyl)amino C_{1-6} alkyl group, carboxy C_{1-6} alkyl group, carbamoyl C_{1-6} alkyl group, trifluoromethyl group, difluoromethyl group, fluoromethyl group, amino group, C_{1-6} alkylamino group or di(C_{1-6} alkyl)amino group, R^{12} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy group or amino group), hydroxy C_{1-6} alkoxy C_{1-6} alkylamino groups, C_{6-10} aromatic hydrocarbon-C_{1-6} alkylamino groups, C_{1-6} alkoxycarbonylamino groups, C_{6-10} aromatic hydrocarbon-carbonylamino groups, hydroxyimino group, C_{1-6} alkoxyimino groups, oxo group, hydroxyimino C_{1-6} alkyl groups, C_{1-6} alkoxycarbonyl C_{1-6} alkylamino groups, (C_{2-6}

alkanoylamino C_{1-6} alkyl)amino groups, and C_{6-10} aromatic hydrocarbon groups (in which, the C_{6-10} aromatic hydrocarbon group may be substituted with 1 to 3 substituents selected from halogen atoms, C_{1-6} alkyl groups, C_{1-6} alkoxy groups, C_{2-6} alkenyl groups, formyl group, C_{2-6} alkanoyl groups, carboxyl group, carboxyamino C_{1-6} alkyl groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkyl groups, oxo group, nitro group, cyano group, amidino group, C_{2-6} alkenyloxy groups, hydroxy group, thioxo group, amino group, C_{1-6} alkylamino groups, di(C_{1-6} alkyl)amino groups, amino C_{1-6} alkyl groups, C_{1-6} alkoxycarbonyl groups, carbamoyl group, C_{1-6} alkylcarbamoyl groups, di(C_{1-6} alkyl)carbamoyl groups, thiocarbamoyl group, C_{1-6} alkylthiocarbamoyl groups, di(C_{1-6} alkyl)thiocarbamoyl groups, C_{2-6} alkanoylamino groups, C_{2-6} alkanoyl(C_{1-6} alkyl)amino groups, thio C_{2-6} alkanoylamino groups, thio C_{2-6} alkanoyl(C_{1-6} alkyl)amino groups, formylamino group, formyl(C_{1-6} alkyl)amino groups, thioformylamino group, thioformyl(C_{1-6} alkyl)amino groups, C_{2-6} alkanoyloxy groups, formyloxy group, mercapto group, C_{1-6} alkylthio groups, C_{1-6} alkylsulfinyl groups, C_{1-6} alkylsulfonyl groups, aminosulfonyl group, C_{1-6} alkylaminosulfonyl groups, di(C_{1-6} alkyl)aminosulfonyl groups, C_{1-6} alkylsulfonylamino groups, and C_{1-6} alkylsulfonyl(C_{1-6} alkyl)amino groups; ~~and~~

R^3 ~~each independently~~ represents pyridyl ~~which may have a substituent~~ which may have 1 to 3 substituents selected from halogen atoms, C_{1-6} alkyl groups, trihalogenomethyl groups, C_{1-6} alkoxy groups, formyl group, C_{2-6} alkanoyl groups, carboxyl group, carboxyamino C_{1-6} alkyl groups, C_{1-6} alkoxycarbonylamino C_{1-6} alkyl groups, oxo group, nitro group, cyano group, amidino group, C_{2-6} alkenyloxy groups, hydroxy group, thioxo group, amino group, C_{1-6} alkylamino groups, di(C_{1-6} alkyl)amino groups, C_{1-6} alkoxycarbonyl groups, carbamoyl group, C_{1-6} alkylcarbamoyl groups, di(C_{1-6} alkyl)carbamoyl groups, thiocarbamoyl group, C_{1-6} alkylthiocarbamoyl groups, di(C_{1-6} alkyl)thiocarbamoyl groups, mercapto group, C_{1-6} alkylthio groups, C_{1-6} alkylsulfinyl groups and C_{1-6} alkylsulfonyl groups,

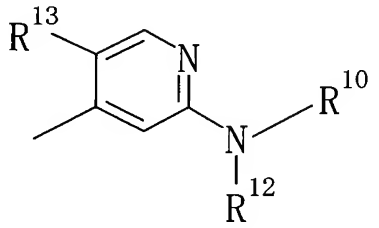
R^4 represents a hydrogen atom or a C_{1-6} alkyl group,

X represents $-S-$, $-SO-$ or $-SO_2-$;

an N-oxide or S-oxide thereof; or a salt thereof..

Claims 2-7 (Canceled).

Claim 8 (Currently Amended): A compound according to Claim 1, wherein R^2 represents a group represented by the following formula:



wherein,

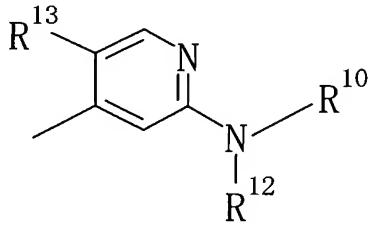
R^{10} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy C_{1-6} alkyl group, C_{1-6} alkylsulfinyl C_{1-6} alkyl group, C_{1-6} alkylsulfonyl C_{1-6} alkyl group, carboxy C_{1-6} alkyl group, ~~heterocycle-C_{1-6}-alkyl group~~, or a group represented by the formula: $-SO_2-R^{11}$ (in which, R^{11} represents a C_{1-6} alkyl, ~~heterocyclic, C_{1-6}-alkyl-heterocyclic, heterocycle-C_{1-6}-alkyl,~~ hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di(C_{1-6} alkyl)amino C_{1-6} alkyl, carboxy C_{1-6} alkyl, carbamoyl C_{1-6} alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C_{1-6} alkylamino or di(C_{1-6} alkyl)amino),

R^{12} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy group, or amino group, ~~or R^{11} and R^{12} may, taken together with a sulfur atom to which R^{11} is attached and a nitrogen atom to which R^{12} is attached, form a 5- or 6-membered aliphatic heterocycle having 1 to 4 atoms selected from nitrogen, oxygen and sulfur atoms~~, and

R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group; an N-oxide or S oxide thereof; or a salt thereof~~;~~

~~wherein the hereocycle and heterocyclic group represent a saturated monocyclic heterocyclic group, selected from 3- to 7- membered heterocycles having 1 to 4 atoms selected from nitrogen, oxygen and sulfur atoms, or an unsaturated or aromatic monocyclic heterocyclic group selected from 3- to 7-membered heterocyclic groups having 1 to 4 atoms selected from nitrogen, oxygen and sulfur atoms~~.

Claim 9 (Currently Amended): A compound according to Claim 1, wherein R^2 represents a group represented by the following formula:



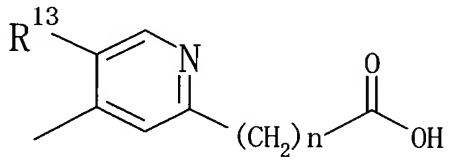
wherein,

R^{10} represents a group represented by the formula: $-SO_2-R^{11}$ (in which, R^{11} represents a C_{1-6} alkyl, ~~heterocyclic, C_{1-6} alkyl heterocyclic, heterocycle C_{1-6} alkyl,~~ hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di(C_{1-6} alkyl)amino C_{1-6} alkyl, carboxy C_{1-6} alkyl, carbamoyl C_{1-6} alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C_{1-6} alkylamino or di(C_{1-6} alkyl)amino),

R^{12} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy group or amino group, ~~or R^{11} and R^{12} may, taken together with a sulfur atom to which R^{11} is attached and a nitrogen atom to which R^{12} is attached, form a 5- or 6-membered aliphatic heterocycle having 1 to 4 atoms selected from nitrogen, oxygen and sulfur atoms,~~ and

R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group; an N-oxide or S-oxide thereof; or a salt thereof.

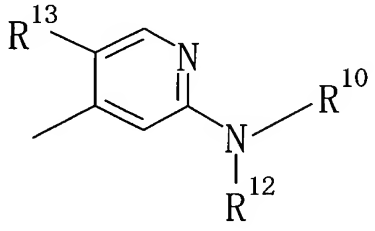
Claim 10 (Currently Amended): A compound according to Claim 1, wherein R^2 represents a compound represented by the formula:



wherein,

R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group, and n stands for an integer of from 0 to 6; an N-oxide or S-oxide thereof; or a salt thereof.

Claim 11 (Currently Amended): A compound according to Claim 1, wherein R^1 represents a 2,5-difluorophenyl or 2-fluoro-5-cyanophenyl group, R^3 represents a 5-chloro-2-pyridyl, 6-chloro-3-pyridyl, or 6-trifluoromethyl-3-pyridyl group; R^2 represents a group represented by the following formula:



wherein,

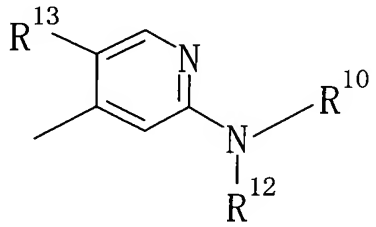
R^{10} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy C_{1-6} alkyl group, C_{1-6} alkylsulfinyl C_{1-6} alkyl group, C_{1-6} alkylsulfonyl C_{1-6} alkyl group, carboxy C_{1-6} alkyl group, ~~heterocycle-C_{1-6}-alkyl group,~~ or a group represented by the formula: $-SO_2-R^{11}$ (in which, R^{11} represents a C_{1-6} alkyl, ~~heterocyclic, C_{1-6}-alkyl-heterocyclic, heterocycle-C_{1-6}-alkyl,~~ hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di(C_{1-6} alkyl)amino C_{1-6} alkyl, carboxy C_{1-6} alkyl, carbamoyl C_{1-6} alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C_{1-6} alkylamino, or di(C_{1-6} alkyl)amino),

R^{12} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy group, or amino group~~, or R^{11} and R^{12} may, taken together with a sulfur atom to which R^{11} is attached and a nitrogen atom to which R^{12} is attached, form a 5- or 6-membered aliphatic heterocycle having 1 to 4 atoms selected from nitrogen, oxygen and sulfur atoms~~, and

R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group; an N-oxide or S-oxide thereof; or a salt thereof.

Claim 12 (Currently Amended): A compound according to Claim 1, wherein R^1 represents a 2,5-difluorophenyl or 2-fluoro-5-cyanophenyl group, R^3 represents a 5-chloro-2-pyridyl, 6-chloro-3-pyridyl or 6-trifluoromethyl-3-pyridyl group;

R^2 represents a group represented by the following formula:



wherein,

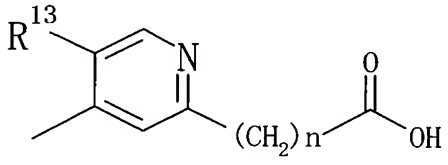
R^{10} represents a group represented by the formula: $-SO_2-R^{11}$ (in which, R^{11} represents a C_{1-6} alkyl, ~~heterocyclic, C_{1-6} alkyl heterocyclic, heterocycle C_{1-6} alkyl,~~ hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di(C_{1-6} alkyl)amino C_{1-6} alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C_{1-6} alkylamino or di(C_{1-6} alkyl)amino),

R^{12} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy group or amino group~~, or R^{11} and R^{12} may, taken together with a sulfur atom to which R^{11} is attached and a nitrogen atom to which R^{12} is attached, form a 5- or 6-membered aliphatic heterocycle~~, and

R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group; an N-oxide or S-oxide thereof; or a salt thereof.

Claim 13 (Previously Presented): A compound according to Claim 1, wherein R^1 represents a 2,5-difluorophenyl or 2-fluoro-5-cyanophenyl group, R^3 represents a 5-chloro-2-pyridyl, 6-chloro-3-pyridyl, or 6-trifluoromethyl-3-pyridyl group;

R^2 represents a group represented by the following formula:



wherein,

R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group and n stands for an integer of from 0 to 6; an N-oxide or S-oxide thereof; or a salt thereof.

Claim 14 (Previously Presented): A medicament comprising, as an effective ingredient, a compound as claimed in Claim 1, an N-oxide or S-oxide thereof; or a salt thereof.

Claim 15 (Currently Amended): A medicament according to Claim 14, which is used for ~~prevention or~~ treatment of a disease resulting from abnormal production or secretion of β-amyloid protein.

Claim 16 (Original): A medicament according to Claim 15, wherein the disease resulting from abnormal production or secretion of β amyloid protein is Alzheimer disease or Down syndrome.

Claim 17 (Previously Presented): A pharmaceutical composition comprising a compound as claimed in Claim 1, an N-oxide or S oxide thereof, or a salt thereof and a pharmaceutically acceptable carrier.

Claims 18-20 (Canceled):

Claim 21 (Previously Presented; Withdrawn): A method of treating a disease resulting from abnormal production or secretion of β-amyloid protein, which comprises administering an effective amount of a compound as claimed in Claim 1, an N-oxide or S-oxide thereof, or a salt thereof.

Claim 22 (Previously Presented, Withdrawn): A method according to Claim 21, wherein the disease resulting from abnormal production or secretion of β amyloid protein is Alzheimer disease or Down syndrome.

Claim 23 (Currently Amended): A compound according to Claim 1, comprising at least one selected from the group consisting of:

~~5-Chloro-2-[(2,5-difluorophenyl-4-pyridylmethyl)thio]pyridine,~~

~~5-Chloro-2-[(2,5-difluorophenyl-4-pyridylmethyl)sulfonyl]pyridine,~~

~~2-Chloro-5-[(3-chloropyridin-4-yl)(2,5-difluorophenyl)methylthio]pyridine,~~

~~2-Chloro-5-[(3-chloropyridin-4-yl)(2,5-difluorophenyl)methylsulfonyl]pyridine,~~

~~5-[(3-Chloropyridin-4-yl)(2,5-difluorophenyl)methylsulfonyl]-2-fluoropyridine,~~

[5-Chloro-4-[(5-chloropyridin-2-ylsulfonyl)(2,5-difluorophenyl)methyl]pyridin-2-yl]amine,

N-[5-Chloro-4-[(5-chloropyridin-2-ylsulfonyl)(2,5-difluorophenyl)methyl]pyridin-2-yl]methanesulfonamide,

t-Butyl [5-chloro-4-[(6-chloropyridin-3-ylthio)(2,5-difluorophenyl)methyl]pyridin-2-yl]carbamate,

[5-Chloro-4-[(6-chloropyridin-3-ylsulfonyl)(2,5-difluorophenyl)methyl]pyridin-2-yl]amine, and

[5-Chloro-4-[(2,5-difluorophenyl)(6-trifluoromethylpyridin-3-ylsulfonyl)methyl]pyridin-2-yl]amine.